

PORCELLANID CRABS OF THE ISLAS DEL ROSARIO,  
CARIBBEAN COAST OF COLOMBIA, WITH A  
DESCRIPTION OF *PETROLISTHES ROSARIENSIS*  
NEW SPECIES (CRUSTACEA: ANOMURA)

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A B S T R A C T

Collections of porcellanid crabs were made on the Islas del Rosario, Colombia, during a 12-day period, sampling as completely as possible all accessible biotopes. The majority of the 17 species in five genera that were collected did not occur deeper than 2 m and were found in formations of the coral *Porites porites* (Pallas). A considerable number of species inhabit the intertidal zone.

*Petrolisthes rosariensis* new species lives mainly in *Porites* interstices and is described. *Parapetrolisthes tortugensis* (Glassell, 1945), known previously from Florida, the Bahamas and some Antillean localities, is recorded for the first time from Colombia. A total of 30 species of porcelain crabs are now known to occur on the Atlantic coast of Colombia, representing 86% of the Caribbean and Antillean porcellanid fauna.

The porcellanid fauna in the Caribbean waters of Colombia has received only sporadic attention in the past. The first species to be noted was *Megalobrachium poeyi* (Guérin, 1855) from Sabanilla (Benedict, 1901). Additional records have been provided by Haig (1956) who mentioned *Megalobrachium roseum* (Rathbun, 1900) from Santa Marta and *Pachycheles chacei* Haig, 1956 from Cartagena. In the same paper Haig also reported *Porcellana sayana* (Leach, 1820) from 2 mi southwest of Cabo de la Vela. Other references have been provided by Gore (1970) who noted *P. sayana* from Golfo de Morosquillo and *Porcellana sigsbeiana* A. Milne Edwards, 1880 from the same locality, from north of Punta San Bernardo and from off Punta Broqueles. Later, Gore (1974) communicated additional data on *Pachycheles ackleianus* A. Milne Edwards, 1880 from off Cabo de la Vela, *P. sayana* from the Guajira peninsula and *P. sigsbeiana* from off Cartagena.

Thus, only six species of porcellanid crabs were known to occur in Colombian coastal waters of the Caribbean, until a recent study by Werding (1977) provided more detailed information on the porcellanid fauna of both the Santa Marta area and, for the first time, for the South American mainland bordering the Caribbean Sea as well. The same study emphasized the need for further faunistic studies in the southwestern part of the Caribbean, in order to obtain more complete information on species composition and distribution.

As a result of previous records and the present study, 30 species of porcelain crabs are now known to occur in the Atlantic coastal waters of Colombia, representing 86% of the total Caribbean and Antillean fauna which comprises 35 species. Of this number, *Petrolisthes magdalenensis* Werding, 1978, the herein described *P. rosariensis* new species, *P. tonsorius* Haig, 1960 (formerly known only from the eastern Pacific), and *Pisidia brasiliensis* Haig (in Rodrigues da Costa, 1968) (formerly known only from Brazil), are presently recorded in the Caribbean only from Santa Marta or the Islas del Rosario.

The most abundant species found on the Islas del Rosario was *Petrolisthes galathinus* (Bosc, 1801 or 1802) which lives in large numbers in the interstices of *Porites* coral. Less abundant, but also very common in the same habitat, is *P.*

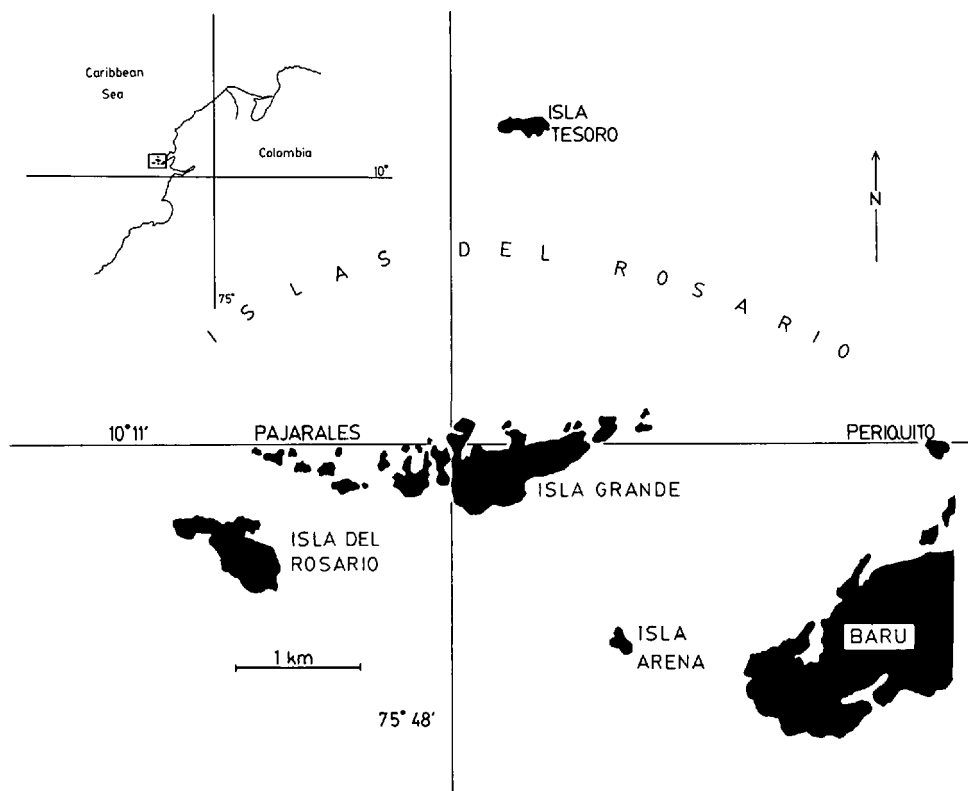


Figure 1. Geographical position of the Rosario Islands.

*rosariensis* new species. All of the species found in the present study have been recorded before from Santa Marta (Werding, 1977) with the exception of *Parapetrolisthes tortugensis* (Glassell, 1945), which is now reported for the first time from Colombia. *Petrolisthes rosariensis* new species appeared in the previously mentioned paper as *Petrolisthes* sp. I.

### Description of the Area

The Islas del Rosario are a group of small coral islands, situated about 30 miles southwest of Cartagena, Colombia between 10°8' and 10°15' north latitude and 75°40' and 75°50' west longitude. They belong to the most highly developed reef areas on the Atlantic coast of Colombia and are formed on extensive formations of fossil coral reefs. The island group consists of the central Isla Grande, with Isla del Rosario to the west, Isla Tesoro to the north, Periquito to the east and Isla Arena to the south (Fig. 1).

In addition to the coral communities, which are the dominant element in the whole island group, large beds of the turtle grass, *Thalassia testudinum* (König) occur in the back reef zone, and some smaller formations of the red mangrove, *Rhizophora mangle* (L.) are found. A more detailed description of the Islas del Rosario has been given by Pfaff (1969) and by Werding and Sanchez (in press).

### METHODS

During a 2-day period in February 1974, and a 10-day field trip in May 1977, 17 species of porcellanid crabs were collected. All samples were taken by hand, using SCUBA, snorkel and mask, or while wading in very shallow water. Collections were made from the intertidal zone to a depth of 20 m, in an attempt to sample all accessible biotopes.

All specimens were measured using a calibrated ocular reticle on a stereomicroscope. Measure-

ments are given in millimeters, rounded off to the nearest tenth. Carapace length is followed by carapace width. The collection is deposited in the Instituto de Investigaciones Marinas de Punta de Betín (INVEMAR), Santa Marta. Type specimens are distributed as indicated in the description of species. For synonymies and distribution of species, the monographs by Haig (1956; 1960) and the recent papers by Gore (1970; 1974), by Gore and Abele (1976) and by Werdning (1977) may be consulted.

Family PORCELLANIDAE Haworth, 1825

*Megalobrachium* Stimpson, 1858

*Megalobrachium mortenseni* Haig, 1962

*Material Examined*.—1♂, Isla Grande, 1 m, February 1974.

*Measurements*.— $3.3 \times 3.2$  mm.

*Remarks*.—*M. mortenseni* is known in the Caribbean from only a few reports, and only one specimen was found in the *Porites* interstices. The species seems to prefer rocky biotopes, and it can be found living under stones in the Santa Marta area (Werdning, 1977).

*Pachycheles* Stimpson, 1858

*Pachycheles ackleianus* A. Milne Edwards, 1880

*Material Examined*.—1♂, Isla Grande, 1–2 m, May 1977.

*Measurements*.— $3.6 \times 3.8$  mm.

*Remarks*.—This species was found in the Santa Marta area principally in a species of silicosponge, which forms incrustations under stones. The lack of such sponges may be responsible for the scarcity of the species in the Islas del Rosario.

*Pachycheles chacei* Haig, 1956

*Material Examined*.—4♂♂, 4♀♀, Isla del Rosario, intertidal, May 1977.

*Measurements*.—Largest ♂  $4.5 \times 5.4$  mm; largest ♀  $5.5 \times 6.5$  mm.

*Remarks*.—This species was found only between fossil corals in the intertidal zone.

*Pachycheles pilosus* (H. Milne Edwards, 1837)

*Material Examined*.—3♀♀ (ov), Isla del Rosario, intertidal, May 1977.

*Measurements*.—Largest ♀  $6.2 \times 6.8$  mm.

*Remarks*.—*P. pilosus* was found in the lower level of the intertidal zone between coral debris and sponges.

*Pachycheles riisei* (Stimpson, 1858)

*Material Examined*.—1♂, Isla Grande, 1 m, May 1977.

*Measurements*.— $3.0 \times 3.4$  mm.

*Remarks*.—The single specimen was found in *Porites* interstices together with *Petrolisthes galathinus* and *Petrolisthes rosariensis* new species.

*Pachycheles serratus* (Benedict, 1901)

*Material Examined*.—2♂♂, 2♀♀ (ov), Isla Grande,  $\frac{1}{2}$ –1 m, May 1977.

*Measurements*.—Largest ♂  $5.9 \times 6.0$  mm; largest ♀  $6.2 \times 6.9$  mm.

*Remarks.*—*P. serratus* was found in *Porites* interstices. All specimens had a thick pubescence on the chelipeds.

*Pachycheles susanae* Gore and Abele, 1973

*Material Examined.*—5♂♂, 5♀♀ (ov), Isla Grande, ½–1 m, May 1977.

*Measurements.*—Largest ♂ 4.1 × 4.6 mm; largest ♀ 4.5 × 5.8 mm.

*Remarks.*—*P. susanae* has been reported previously only from its type locality at Galeta Island, Panamá (Gore and Abele, 1973; 1976) and from Santa Marta (Werding, 1977). The species is more common on the Islas del Rosario than in the Santa Marta area and seems to prefer coral biotopes. The species was found in shallow water in *Porites* formations. Gore and Abele (1976) describe the color of the species as red-orange, whereas all specimens encountered by the author are brown with a white pattern, as described in Werding (1977). All females found had a five-plated telson.

*Parapetrolisthes* Haig, 1960

*Parapetrolisthes tortugensis* (Glassell, 1945)

(Fig. 2)

*Material Examined.*—4♂♂, 4♀♀ (ov) Isla Grande, 9 m, May 1977.

*Measurements.*—Largest ♂ 4.5 × 4.6 mm; largest ♀ 4.2 × 4.0 mm (the male measured is parasitized by a bopyrid isopod and therefore somewhat deformed).

*Remarks.*—*P. tortugensis* is a species which, to date, has been reported only a few times. It is here reported for the first time from Colombia and the southwestern part of the Caribbean. Glassell (1945) stated that it ranged from "extreme low water to a depth of 11 fathoms" and his specimens were taken from *Porites* clumps. Haig (1956) reported the species from Isla Tortuga, Venezuela, from depths between 21 and 22 fathoms. In another paper by Haig (1962), the species was reported from the Virgin Islands from depths between 14 and 22 fathoms. Gore (1974) noted the species from British Honduras and Bimini, Bahamas from 18 to 37 m. In spite of an intensive search in shallow water, no specimens were collected on the Islas del Rosario in less than 9 m of water. On the whole, *P. tortugensis* seems to prefer greater depths, and the findings of Glassell (1945) seem to be exceptionally shallow.

*Petrolisthes* Stimpson, 1858

*Petrolisthes armatus* (Gibbes, 1858)

*Material Examined.*—12♂♂, 4♀♀ (ov), Isla Grande, on red mangrove, May 1977.

*Measurements.*—Largest ♂ 9.8 × 8.7 mm; largest ♀ 7.6 × 7.0 mm.

*Remarks.*—*P. armatus* has been found on the southeastern part of the island among the roots of mangroves in a small lagoon having only a narrow connection with the sea.

*Petrolisthes cessacii* (A. Milne Edwards, 1878)

*Material Examined.*—2♂♂, 3♀♀ (ov), Isla del Rosario, intertidal, May 1977.

*Measurements.*—Largest ♂ 8.2 × 7.4 mm; largest ♀ 5.9 × 5.6 mm.

*Remarks.*—Smaller specimens may exhibit a minute second epibranchial spine,

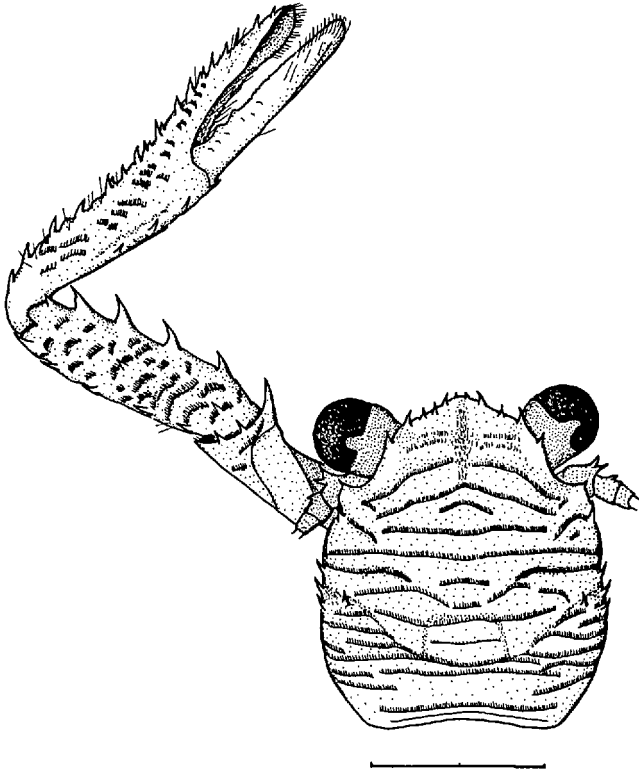


Figure 2. *Parapetrolisthes tortugensis* (Glassell, 1945). Male from Isla Grande. Scale line equals 2 mm.

a character which is considered typical for *P. marginatus*, a closely related western Atlantic species (Gore, 1974).

*Petrolisthes galathinus* (Bosc, 1801 or 1802)

*Material Examined*.—21♂♂, 16♀♀ (15 ov), Isla Grande, Isla del Rosario, Isla de Tesoro, ½–10 m, May 1977.

*Measurements*.—Largest ♂ 9.2 × 9.1 mm; largest ♀ 10.1 × 10.2 mm.

*Remarks*.—*P. galathinus* is the most abundant species in the Islas del Rosario. It was found in large numbers in the *Porites* interstices in very shallow water, but also as deep as 10 m. The very similar *P. rosariensis* new species occurs together with *P. galathinus*; the former species, however, can be distinguished in the field by its different coloration, as described by Werding (1977).

*Petrolisthes jugosus* Streets, 1872

*Material Examined*.—2♂♂, 4♀♀ (ov), Isla Grande, Isla del Rosario, ½–1 m, May 1977.

*Measurements*.—Largest ♂ 3.0 × 3.1 mm; largest ♀ 3.5 × 4.2 mm.

*Remarks*.—The specimens of *P. jugosus* were found together with *P. galathinus* and *P. rosariensis* new species in coral interspaces.

*Petrolisthes politus* (Gray, 1831)

*Material Examined*.—2♀ ♀ (1 ov), Isla del Rosario, intertidal, May 1977.

*Measurements*.—Largest ♀ 5.3 × 5.7 mm.

*Remarks*.—*P. politus* was found in the lower level of the intertidal but showed no affinity for living corals.

*Petrolisthes quadratus* Benedict, 1901

*Material Examined*.—12♂ ♂, 10♀ ♀ (3 ov), 2 juv., Isla Grande, intertidal, February 1974.

*Measurements*.—Largest ♂ 4.9 × 5.1 mm; largest ♀ 3.9 × 4.1 mm.

*Remarks*.—*P. quadratus* is the species which occupies the highest level in the intertidal. It was found under fragments of fossil corals, cast up on hard surfaces, and where the water was barely washing.

*Petrolisthes tridentatus* Stimpson, 1859

*Material Examined*.—2♂ ♂, 6♀ ♀ (1 ov), Isla del Rosario, intertidal, May 1977.

*Measurements*.—Largest ♂ 3.6 × 3.4 mm; largest ♀ 3.9 × 4.0 mm.

*Remarks*.—*P. tridentatus* can be found at lower levels of the rocky intertidal than *P. quadratus* and prefers smaller and more closed interstices than the latter.

*Petrolisthes rosariensis* new species  
(Fig. 3)

*Material Examined*.—Holotype ♂ 5.8 × 5.5 mm; type locality Isla Grande, Islas del Rosario, Colombia 1 m in *Porites*, May 1977 (Senckenbergmuseum Frankfurt, SMF 8841).

PARATYPES. 1♂, 7♀ ♀ (ov) (Allan Hancock Foundation, AHF 773); 2♂ ♂, 2♀ ♀ (ov) (Museo del Mar, Bogotá, MM 4594); 2♂ ♂, 2♀ ♀ (ov) (Senckenbergmuseum Frankfurt, SMF 8842); 2♂ ♂, 2♀ ♀ (ov) Colección INVEMAR, Santa Marta, all from the same locality as the holotype specimen.

*Description*.—Carapace covered with transverse piliferous striations, interrupted generally at the ridges, separating the different regions. Front subtriangular with a shallow median groove, covered with a short pubescence. No strong superocular spine but one to three superocular spinules often present. Outer orbital angle produced into a spine. One strong epibranchial spine at cervical groove, followed by a second smaller one on the epibranchial region.

First movable segment of antenna with an anterior lamellar spine-tipped projection, second and third nearly smooth, flagellum naked. Outer maxillipeds rugose.

Merus of chelipeds with piliferous striations, anterior margin with a large lamellar tooth. Carpus and manus with piliferous striations. Piliferous striations more distinct on dorsal surface, less distinct on ventral surface. Carpus less than twice as long as wide, armed on anterior margin with a row of four serrate-edged teeth, a fifth occasionally present. Posterior margin rugose, some of the rugae produced into spines. Striation of the dorsal surface of the manus discontinuous, changing to flattened tubercles on the outer margin of fingers. Outer margin straight or slightly concave, armed with some irregularly set small spines and covered with a fringe of plumose hairs. Fingers meeting throughout, gape of fingers without pubescence.

Merus of first walking leg armed with four to six spines and a fringe of plumose

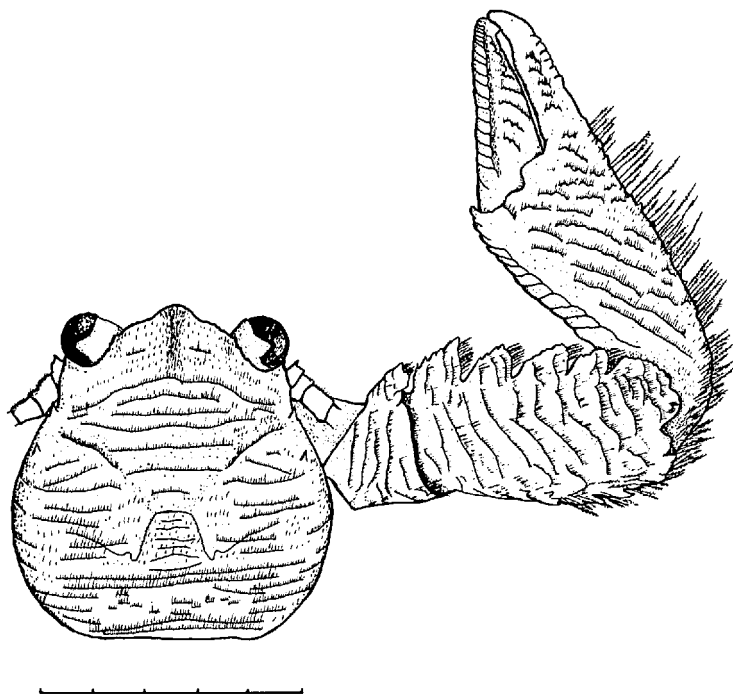


Figure 3. *Petrolisthes rosariensis* sp. nov., paratype male from Isla Grande. Scale line equals 5 mm.

hairs on the dorsal margin, and one strong spine on the posteroventral angle; second walking leg similar, but with five to six spines on dorsal margin; third with three to five dorsal spines but lacking a posteroventral spine.

Telson composed of seven plates.

**Coloration.**—The color pattern of living animals varies from yellowish to a brownish background color on all dorsal parts, overlaid with dark red spots differing in density and distribution among the specimens. Tips of fingers are always orange or yellowish; ventral surface of chelipeds and walking legs are purplish red; outer margin of the manus, and carpal teeth, with a yellow border.

**Ecology.**—*P. rosariensis* was found in great numbers among *Porites* corals in shallow water. The species has also been found in the Santa Marta area under stones to a depth of 6 m, but never in as large numbers as in the coral environment.

**Relationships.**—*P. rosariensis* is very close to *P. galathinus*, a species common in the Caribbean and represented in the eastern Pacific as well, and to *P. glasselli* Haig, 1957 from the eastern Pacific. It differs mainly from *P. galathinus* in having two epibranchial spines, instead of one, on each lateral margin, in the different shape of the outer margin of the chelae, which is more convex in *P. galathinus*, and in lacking a pubescence in the gape of the fingers. As with *P. glasselli* it has two epibranchial spines, but may be distinguished from that species by the convex outer margin of the manus, and normally having four instead of five carpal teeth on the cheliped.

Genus *Porcellana* Lamarck, 1801  
*Porcellana sayana* (Leach, 1820)

*Material Examined*.—1♀, Isla Grande, on hermit crab *Petrochirus diogenes* (L.), 30 m, May 1977.

*Measurements*.— $9.8 \times 8.9$  mm.

*Remarks*.—*P. sayana* is a common symbiont of large hermit crabs.

#### DISCUSSION

The distribution of the species of porcelain crabs within the limited area of the Islas del Rosario may be in response to several factors, such as the structure of the substratum, the water depth and exposure to ambient water movements. The greatest number of species was found in the colonies of the club finger coral *Porites porites*. The attractive factor of the *Porites* corals may not be the living coral itself, because the porcelanids are always found below the living parts and within the system of small interstices formed by the branchings of the coral colonies. This observation is supported by the fact that species such as *Petrolisthes galathinus*, *P. rosariensis*, *Pachycheles serratus* and *P. susanae*, which on the Islas del Rosario show a clearly marked preference for the interstices of living colonies of *Porites porites*, can be found regularly living under stones and between boulders in areas where these are present. There is some indication that *P. rosariensis* may prefer living coral environments to rocky biotopes, because it was found in large numbers on the Islas del Rosario in living *Porites*, but is relatively rare in the Santa Marta area, where no greater *Porites* reefs occur.

*Petrolisthes quadratus* and *P. tridentatus* are typical species of the highest level of the intertidal zone, finding relative protection among dead coral boulders in this area. *P. politus*, on the other hand, prefers situations exposed to heavy water movements, and can be found among boulders within the intertidal and down to 2 m. Another species found from the intertidal down to 2 m is *Pachycheles pilosus*. This small species shows a clear preference for the upper intertidal level, where it inhabits interstices formed by coral debris, fused together by sponges and other organisms. *Petrolisthes armatus* occupies a very specific biotope and was found on the roots of mangroves in a small lagoon, where the salinity of the water changes throughout the year. This corresponds with observations of Gore and Abele (1976) who found *P. armatus* in Panamá in salinities as low as 5‰, and with those of Werding (1977), who noted *P. armatus* principally within estuarine environments.

*Parapetrolisthes tortugensis* differs from all the species in that it prefers depths normally not inhabited by the others. Only *Porcellana sayana*, which lives upon large hermit crabs, was found deeper. Together with its host, this species occurred as deep as 30 m.

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